

THREE NEW SPECIES  
OF *BOMAREA*  
(ALSTROEMERIACEAE)  
FROM MESOAMERICA

During preparation of the treatment of *Bomarea* Mirbel for the *Flora Mesoamericana*, I found three previously undescribed species in the Missouri Botanical Garden herbarium (MO). The types of all three species are from Panama, from where no new species have been described since the treat-

ment of the genus in the *Flora of Panama* (Killip, 1945).

Characters of these new species common to all Alstroemeriaceae (Dahlgren et al., 1985) are: sepals 3; petals 3; stamens 6 with anthers pseudo-basifixed (the tip of the filament inserted in a deep

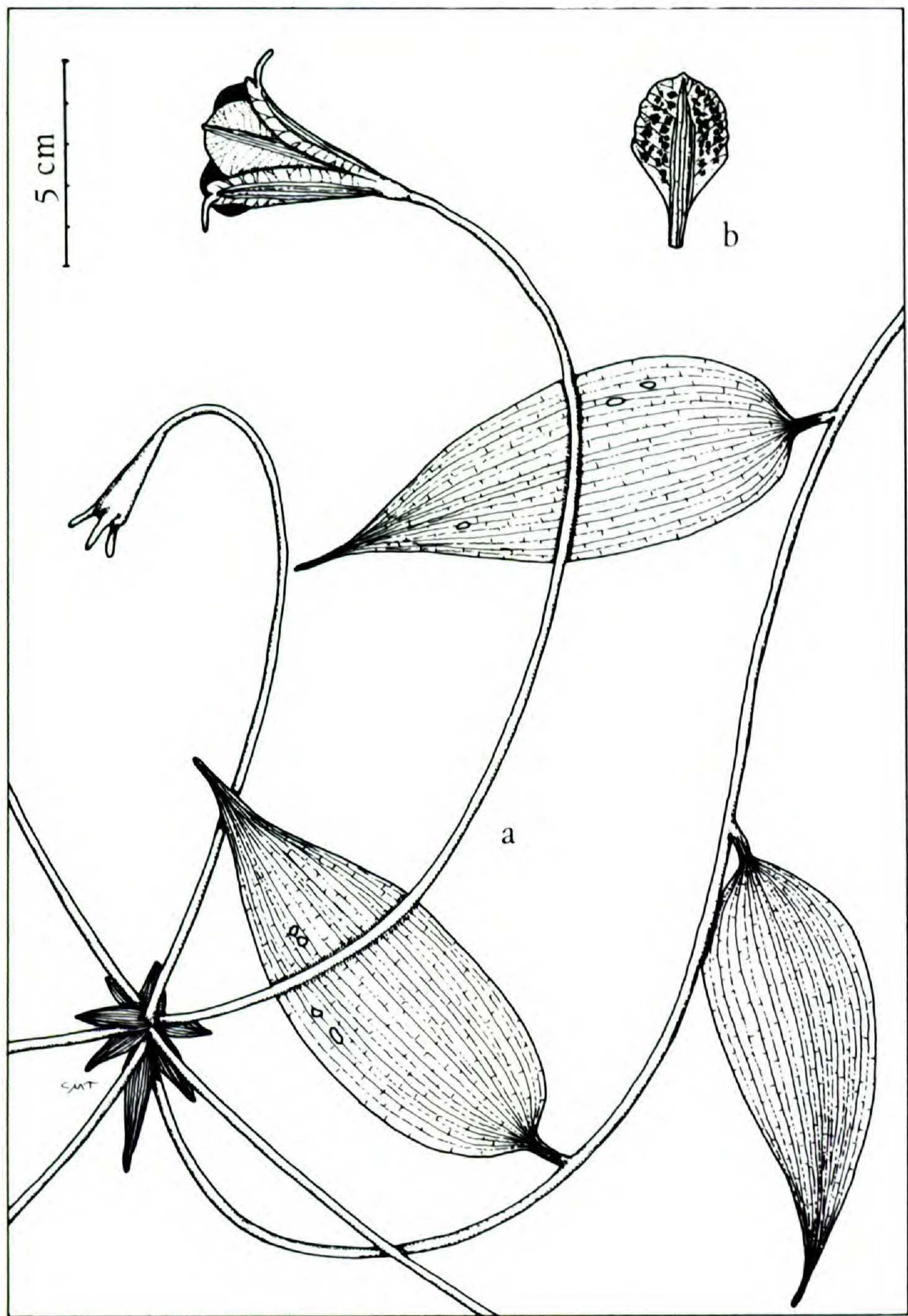


FIGURE 1. *Bomarea caudatisepala*. —a. Plant showing two inflorescence rays. —b. Petal, inside surface (same scale as a). (From holotype, with one leaf from Sytsma et al. 4871.)



pit) and introrsely dehiscent; style 1 with 3 stigmatic branches. Like all other Mesoamerican species of *Bomarea*, the new species have fully inferior ovaries and loculicidally dehiscent, capsular fruits. Stem diameter is measured between the first and second leaves below the umbel; length of compound umbel rays is measured from the involucre to base of the uppermost ovary.

***Bomarea caudatisepala*** Gereau, sp. nov. TYPE: Panama. Chiriquí: 8°46'N, 82°25'W, upper NE slopes of Cerro Pate de Macho and along soggy ridge of Continental Divide, 1,900–2,000 m, 19 June 1987, *Croat 66496* (holotype, MO; isotype, PMA). Figure 1.

Herba volubilis caule glabro ad parce puberulo sub umbella. FOLIUM: lamina ovato-lanceolata, 6.9–12.5 cm longa × 2.7–4.5 cm lata, superne glabra, inferne secus nervos glabra ad parce crispato-pubescente. UMBELLA: bracteis involucralibus 5–8, 3.1–3.8 cm longis × 0.4–0.5 cm latis, glabris; radiis 6–14, 17.1–26.2 cm longis, saltem versus apicem parce fulvo-puberulis, simplicibus ebracteolatisque. FLOS: sepalis oblongo-lanceolatis, 3.6–4.0 cm longis × 0.9 cm latis, externe aurantiacis, unoquoque sepalo cornu viridi 7–10 mm longo sub apice 2–4 mm inserto munito; petalis obovatis, 3.8–4.3 cm longis × 1.6–1.7 cm latis, sepala per 2–5 mm excedentibus, externe aurantiacis, interne flavo-aurantiacis ad viridibus, purpureo-maculatis; ovario anguste obconico, sub anthesi 7–10 mm longo × 3–5 mm lato, parce fulvo-puberulo.

Vine; stem 2.0–2.5 mm diam., glabrous throughout to sparsely puberulent just below the umbel. Petiole 10–13 mm long; leaf blade ovate-lanceolate, 6.9–12.5 × 2.7–4.5 cm (L/W ratio = 2.6–3.0), glabrous above, glabrous to sparsely crisp-pubescent on the nerves beneath. Involucral bracts 5–8, 3.1–3.8 × 0.4–0.5 cm, glabrous; rays of the umbel 6–14, 17.1–26.2 cm long, sparsely brown-puberulent at least toward the tip, unbranched and ebracteolate. Sepals oblong-lanceolate, 3.6–4.0 × ca. 0.9 cm, externally orange with a green horn 7–10 mm long inserted 2–4 mm below the tip; petals obovate, 3.8–4.3 × 1.6–1.7 cm, exceeding the sepals by 2–5 mm, orange without, yellowish orange to green with purplish spots within; filaments 2.9–3.0 mm long; anthers 4.0–6.0 × 1.9–2.4 mm; ovary narrowly obconic, 7–10 × 3–5 at anthesis, sparsely brown puberulent; style 10–14 mm long; stigmatic branches 1.4–1.9 mm long.

Known only from three collections on Cerro Pate de Macho, in cloud forest and elfin forest at 1,700–2,100 m elevation.

*Additional collections examined.* PANAMA. CHIRIQUÍ: Cerro Pate Macho NE of Boquete, S slope along path to

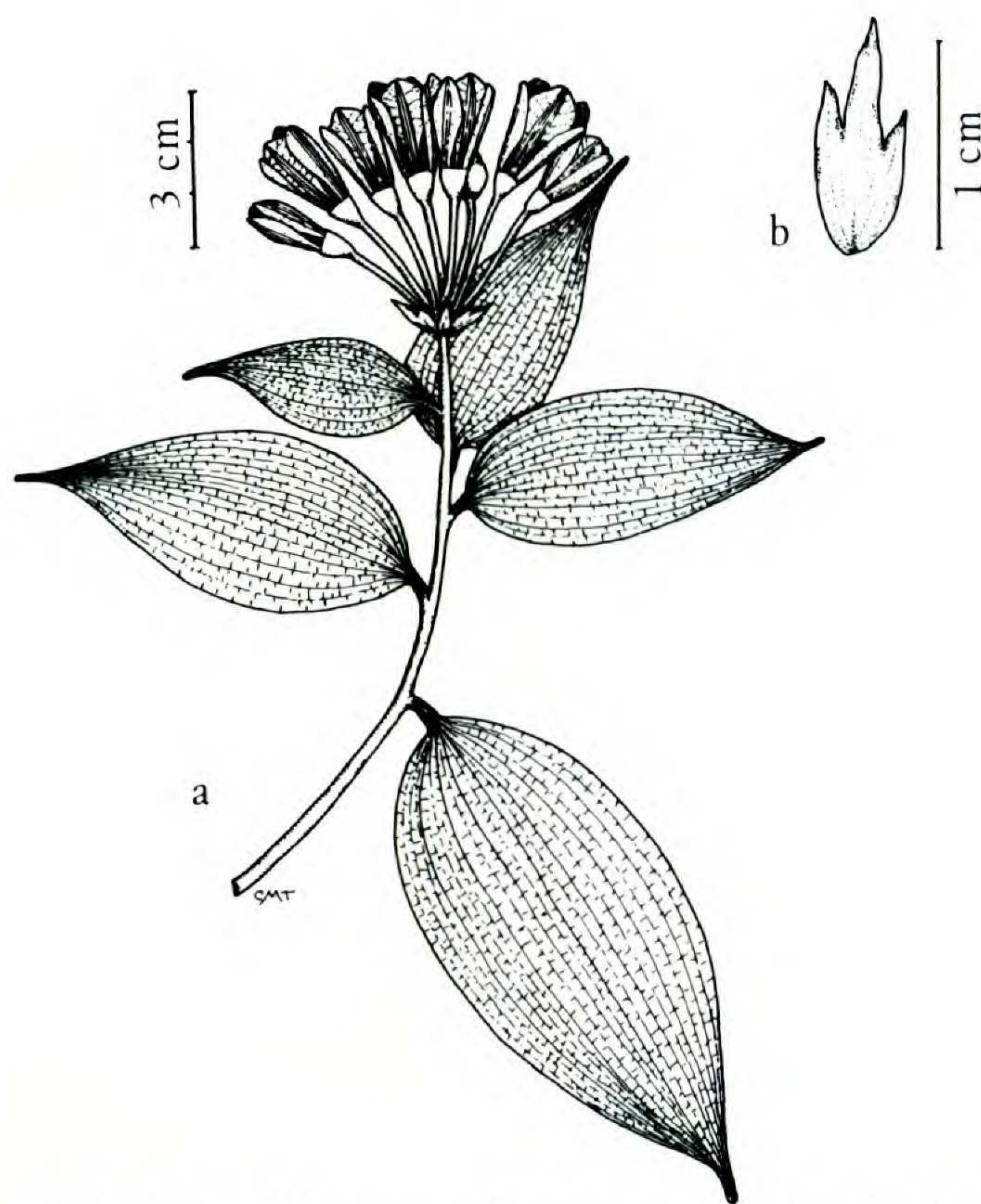


FIGURE 2. *Bomarea suberecta*.—a. Apex of plant with inflorescence.—b. Involucral bract. (From *McPherson 9333*, with one bud from holotype.)

Finca Serrano, near the crest at ca. 2,000 m, 26 May 1981, *Andersson & Sytsma 1307* (GB, MO); SE slopes and summit Cerro Pate Macho, trail from Río Palo Alto, 4 km NE of Boquete, 1,700–2,100 m, 26 May 1981, *Sytsma, Knapp & Andersson 4871* (MO).

This new species of uncertain affinity is easily distinguished from all other Mesoamerican *Bomarea* by the presence of a horn just below the tip of each sepal. Andean species with horned sepals all have much smaller flowers and further differ from *B. caudatisepala* in having very short umbel rays (*B. caudata* Killip, *B. cornigera* Herbert) or compound inflorescences (*B. cornuta* Herbert).

***Bomarea suberecta*** Gereau, sp. nov. TYPE: Panama. Chiriquí: slope of Cerro Respinga above town of Cerro Punta, 2,500 m, 9 Aug. 1972, *W. G. & J. J. D'Arcy 6587* (holotype, MO). Figure 2.

Herba volubilis vel plerumque suberecta ad erecta, ubi erecta usque ad 2 m alta foliis inferioribus ad squamas reductis; rhizomate radices fibrosas in tumores tuberosos terminantes emittente; caule glabro ad puberulo pilis multicellularibus sub umbella. FOLIUM: lamina late ovata ad ovato-lanceolata, (6.0–)8.2–15.3 cm longa × 3.3–7.2 cm lata, utrinque glabra. UMBELLA: bracteis involucralibus 4–5, 0.9–2.0 cm longis × 0.4–0.6 cm latis, profunde trifidis lobo centrali lateralibus multo longiore, glabris; radiis 5–12, 2.2–4.3 cm longis, dense fulvo-puberulis, simplicibus, ebracteolatis vel (in typo tantum) supra medium bracteolam ca. 5 mm longam gerentibus. FLOS: sepalis oblongo-lanceolatis, 1.7–2.0 cm longis × 0.5–0.7 cm latis, base rubris ad aurantiacis sursum flavescentibus



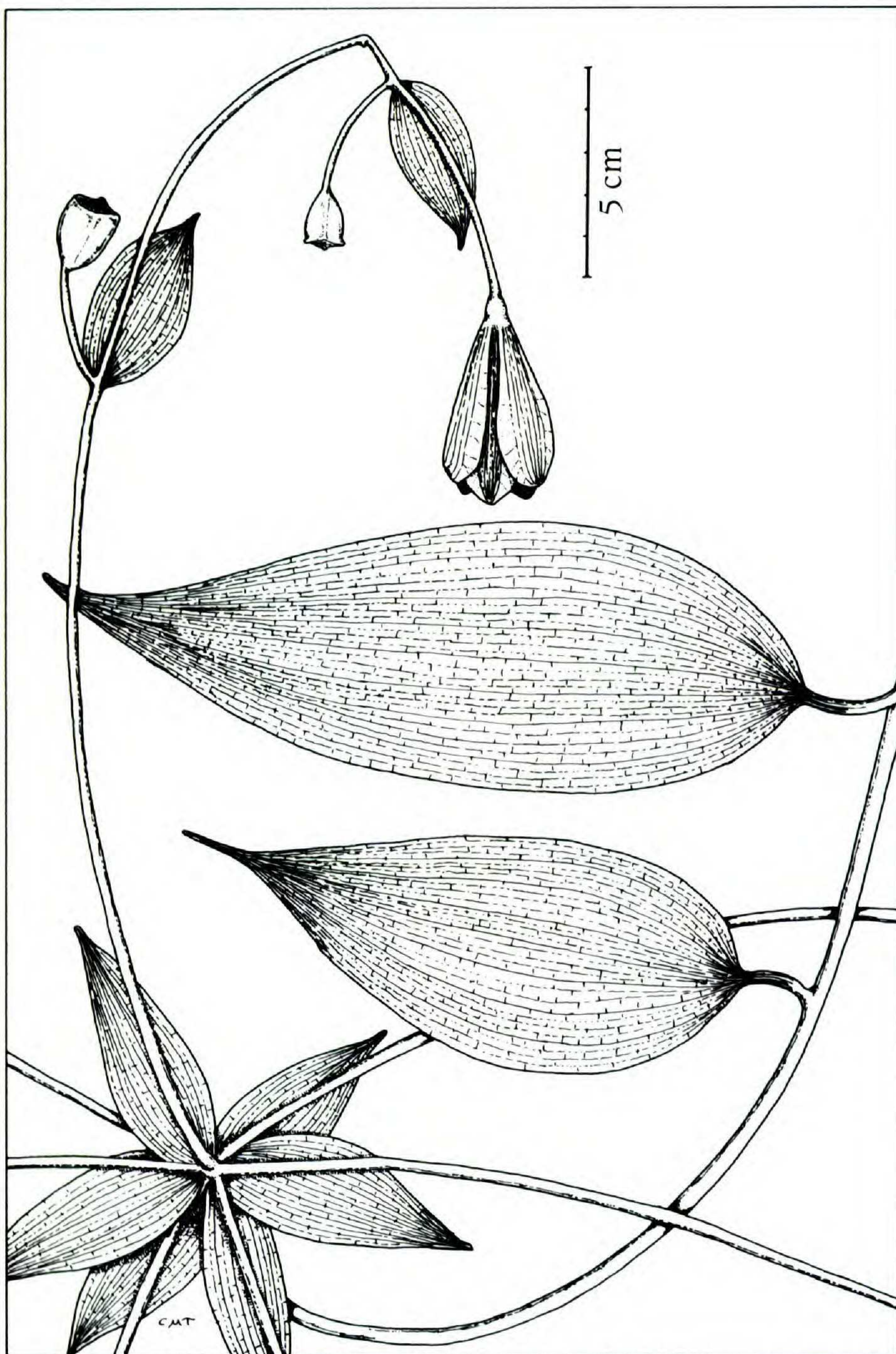


FIGURE 3. *Bomarea bracteolata*. Apex of plant showing one inflorescence ray. (From holotype.)

petalis obovatis, 1.8–2.2 cm longis  $\times$  0.7–1.0 cm latis, sepala per 1–3 mm excedentibus, flavis ad aurantiacis; ovario late obovoideo, sub anthesi 4–7 mm longo  $\times$  3–5 mm lato, dense fulvo-puberulo.

Vine or more often a suberect to erect herb to 2 m from a creeping rhizome with fibrous roots terminating in tuberos swellings, the lower leaves reduced to scales when plant erect; stem 1.9–4.9 mm diam., glabrous to short-puberulent with multicellular hairs just below the umbel. Petiole 7–16 mm long; leaf blade broadly ovate to ovate-lanceolate, (6.0–)8.2–15.3  $\times$  3.3–7.2 cm (L/W ratio = 1.7–2.7(–3.0)), glabrous above and beneath. Involucral bracts 4–5, 0.9–2.0  $\times$  0.4–0.6 cm, deeply trifid with central lobe much longer than lateral lobes, glabrous; rays of the umbel 5–12, 2.2–4.3 cm long, densely brown puberulent, unbranched, ebracteolate or bearing (only in type) above the middle a bracteole ca. 5 mm long. Sepals

oblong-lanceolate, 1.7–2.0  $\times$  0.5–0.7 cm, red to orange at the base, shading to yellow above and green at the tip; petals obovate, 1.8–2.2  $\times$  0.7–1.0 cm, exceeding the sepals by 1–3 mm, yellow to orange; filaments 10–14 mm long; anthers 2.3–3.5  $\times$  1.0–1.6 mm; ovary broadly obovoid, 4–7  $\times$  3–5 mm at anthesis, densely brown puberulent; style 7–15 mm long; stigmatic branches 1.2–3.1 mm long.

Known from the vicinity of Cerro Punta and Cerro Pando (on Costa Rican frontier) in Panama, and from the Atlantic slope of the Cordillera de Talamanca in adjacent Costa Rica, in montane rain forest, *Quercus* forest, and elfin forest at 1,900–2,750 m elevation.

*Additional collections examined.* PANAMA. CHIRIQUÍ: Cerro Punta, 2,100 m, 3 July 1966, *Blum, Olson & Rasmussen* 2428 (MO); Las Nubes, ca. 2,000 m, 7 Aug. 1984, *Croat* 26454 (MO), 26472 (MO, PMA); above



Cerro Punta, 2,000 m, 9 May 1971, *D'Arcy* 5365 (MO); 8°55'N, 82°44'W, E slopes of Cerro Pando, 2,000–2,300 m, 15 Oct. 1981, *Knapp* 1650 (MO); 8°50'N, 82°35'W, road from Cerro Punta village towards Boquete near Bajo Grande, ca. 2,100 m, 5 June 1986, *McPherson* 9333 (MO); 8°52'N, 82°33'W, Cerro Punta, along ridge to watershed to Bocas del Toro, 2,200 m, 26 Jan. 1985, *van der Werff & Herrera* 6436 (MO, PMA); 8°50'N, 82°44'W, Santa Clara to Cerro Pando, 28 Feb. 1985, *van der Werff & Herrera* 7252 (MO, PMA). COSTA RICA. LIMÓN: 9°00'–12'N, 82°57'–59'W, unnamed cordillera between Río Terbi and Río Siní, 2,300–2,500 m, 11 Sep. 1984, *Davidse, Herrera Ch. & Grayum* 28957 (MO), 2,400–2,750 m, 13 Sep. 1984, 29046 (CR, MO); 9°14'–15'N, 82°59'W, Kámuk massif, ridge between Río Tararia and NE-most páramo, 1,900–2,300 m, 16 Sep. 1984, *Davidse & Herrera Ch.* 29206 (MO).

This new species is distinguished by its deeply trifold involucre bracts; these organs are entire in all other known members of the genus. In Mesoamerica, the new species could only be confused with *B. acutifolia* (Link & Otto) Herbert. In addition to its entire involucre bracts, *B. acutifolia* has larger flowers (petals 2.6–3.9 cm long) than *B. suberecta* and a consistently twining or trailing habit. The suberect to weakly vining habit of *B. suberecta* is otherwise only known in a few Andean species, most notably *B. ovata* (Cav.) Mirbel.

**Bomarea bracteolata** Gereau, sp. nov. TYPE: Panama. Chiriquí: 8°45'N, 82°15'W, Fortuna Dam, above Gualaca, on forested slopes behind forestry experimental station, ca. 1,200 m, 9 March 1985, *McPherson* 6706 (holotype, MO; isotype, PMA, not seen; other isotypes distributed as *B. allenii*). Figure 3.

Herba volubilis caule glabro. FOLIUM: lamina ovato-lanceolata, 13.0–17.5 cm longa  $\times$  4.9–6.6 cm lata, superne glabra, inferne secus nervos hyalino-hirsutula pilis multicellularibus complanatis, inter nervos puberula. UMBELLA: bracteis involucrelibus 5–10, 4.2–8.8 cm longis  $\times$  1.8–3.7 cm latis, superne puberulis; radiis 5–14, 14.9–42.3 cm longis, glabris, bivel trifurcatis, unoquoque ramo bracteola foliacea suffulto, ima 3.6–7.0 cm longa. FLOS: sepalis oblongo-lanceolatis, 4.1–4.8 cm longis  $\times$  1.2–1.6 cm latis, rubris vel glauco-salmoneis; petalis anguste obovatis, (3.8–)4.6–5.1 cm longis  $\times$  (0.8–)1.2–1.3 cm latis, sepalis 3 mm brevioribus ad 3 mm longioribus, externe rubellis, interne pallide viridibus ad flavo-albescentibus, maculis nigris vel atro-purpureis obsitis; ovario obconico, sub anthesi ca. 7 mm longo  $\times$  3–4 mm lato, glabro.

Vine; stem 2.3–4.9 mm diam., glabrous. Petiole 16–41 mm long; leaf blade ovate-lanceolate, 13.0–17.5  $\times$  4.9–6.6 cm (L/W ratio = 2.5–2.7), glabrous above, hyaline-hirsutulous with flattened multicellular hairs on the nerves and puberulent between the nerves beneath. Involucre bracts 5–

10, 4.2–8.8  $\times$  1.8–3.7 cm, puberulent above; rays of the umbel 5–14, 14.9–42.3 cm long, glabrous, 2- or 3-branched, each branch subtended by a leaflike bracteole, the lowest bracteole 3.6–7.0 cm long. Sepals oblong-lanceolate, 4.1–4.8  $\times$  1.2–1.6 cm, red or glaucous pink-salmon; petals narrowly obovate, (3.8–)4.6–5.1  $\times$  (0.8–)1.2–1.3 cm, from 3 mm shorter to 3 mm longer than the sepals, reddish without, pale green or yellow-white with black or dark purple spots within; filaments ca. 36 mm long; anthers ca. 5.6  $\times$  2.1 mm; ovary obconic, ca. 7  $\times$  3–4 mm at anthesis, glabrous; style ca. 36 mm long; stigmatic branches ca. 2.7 mm long.

Known from the provinces of Chiriquí and Veraguas in Panama, in premontane wet forest at 750–1,350 m elevation.

*Additional collections examined.* PANAMA. CHIRIQUÍ: type locality, 9 Mar. 1985, *McPherson* 6704 (MO, PMA); 8°45'N, 82°15'W, Fortuna Dam, in valley S of lake, 1,200–1,300 m, 25 Dec. 1986, *McPherson & Aranda* 10126 (MO, PMA). VERAGUAS: vicinity of Santa Fé, slopes of Cerro Tute, 750 m, 25 Mar. 1947, *Allen* 4367 (MO); Cerro Tute, trail past agricultural school near Santa Fé, 1,200 m, 17 Sep. 1979, *Antonio* 1853 (MO); 8°32'N, 81°07'W, trail to Cerro Tute, above Escuela Agrícola Alto de Piedra just W of Santa Fé, 800–1,350 m, 5 June 1982, *Knapp & Dressler* 5456 (MO).

*Bomarea bracteolata* is probably most closely related to *B. allenii* Killip, the only other large-flowered Mesoamerican *Bomarea* with branched umbel rays. These species differ in sepal length (4.1–4.8 cm in *B. bracteolata*, 5.3–6.5 cm in *B. allenii*), lower leaf surface (pubescent in *B. bracteolata*, glabrous in *B. allenii*), and length/width ratio of leaf blades (2.5–2.7 in *B. bracteolata*, 4.0–5.4 in *B. allenii*). The inflorescence and flowers of *B. bracteolata* are very similar to those of *B. kranzlinii* Baker of Colombia (cf. *Stein & McDade* 3205, MO), but the latter species has smaller bracts and bracteoles and narrower leaves that are glabrous beneath.

#### LITERATURE CITED

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